

IN THE CLAIMS:

1. (Currently Amended) A filter for a drill string, the drill string comprising a plurality of drill pipes and a bottom hole assembly for drilling a borehole into the earth;
the filter comprising:

 a perforated receptacle having an open end to receive drilling mud during drilling
opposite a perforated end

 a length of a flange extending perpendicularly from an axis of the receptacle and the flange being attached to the receptacle adjacent the open end comprising first and second mounting surfaces;

 and a transmission element disposed in each of the first and second mounting surfaces, wherein the respective transmission elements are in electrical communication with each other through an electrically conductive cable disposed within a passageway formed in the flange and with a transmission network integrated into the drill string.

2. (Original) The filter of claim 1 wherein each mounting surface comprises a groove which houses the transmission element.

3. (Previously Presented) The filter of claim 2 wherein at least one of the mounting surfaces comprise a passageway intersecting the groove and in fluid communication with the open end of the filter.

4. (Original) The filter of claim 2 wherein at least one of the grooves comprise a biasing element adapted to bias the transmission element towards an adjacent transmission element.

5. (Original) The filter of claim 1 wherein the transmission elements are selected from the group consisting of inductive couplers, direct electrical contacts, and optical couplers.

6. (Previously Presented) The filter of claim 1 wherein the transmission elements are connected by the electrically conductive cable forming a LC circuit.

7. (Original) The filter of claim 6 wherein a capacitor modifies electrical characteristics of the LC circuit.

8. (Original) The filter of claim 1 wherein the perforated receptacle is corrosion-resistant.

9. (Previously Presented) The filter of claim 1 wherein the filter further comprises an electronic component.

10. (Original) The filter of claim 9 wherein the electronic component is selected from the group consisting of a sensor, a router, a power source, a clock source, a repeater, an electronic processor, an integrated circuit, a network node, and an amplifier.

11. (Original) The filter of claim 1 wherein the filter further comprises a mandrel mounted coaxially within a central bore of the drill pipe and adapted for removing the filter.

12. (Currently Amended) A filter for a drill string, the drill string comprising a plurality of drill pipes and a bottom hole assembly for drilling a borehole into the earth;

the filter comprising:

a perforated, corrosive resistant receptacle having an open end to receive drilling mud during drilling opposite a perforated end;

first and second mounting surfaces are formed by a flange, a length of the flange extends perpendicularly from an axis of the receptacle and the mounting surfaces are attached adjacent the open end; and

a transmission element disposed within a groove in each of the first and second mounting surfaces,

wherein the respective transmission elements are in communication with each other through an electrically conductive cable disposed within a passageway formed in the flange forming an LC circuit and with a transmission network integrated into the drill string.

13. (Original) The filter of claim 12 wherein the mounting surfaces comprise a passageway intersecting the groove and in fluid communication with the open end of the filter.

14. (Original) The filter of claim 12 wherein the groove comprises a biasing element adapted to bias the transmission elements towards adjacent transmission elements.

15. (Original) The filter of claim 12 wherein the transmission elements are selected from the group consisting of inductive couplers, direct electrical contacts, and optical couplers.

16. (Previously Presented) The filter of claim 12 wherein a capacitor modifies electrical characteristics of the electrically conductive cable.

17. (Original) The filter of claim 12 wherein the filter further comprises an electronic component.

18. (Original) The filter of claim 17 wherein the electronic circuitry is selected from the group consisting of a sensor, a router, a power source, a clock source, a repeater, an electronic processor, an integrated circuit, a network node, and an amplifier.

19. (Original) The filter of claim 12 wherein the filter further comprises a mandrel mounted coaxially within a central bore of the drill pipe and adapted for removing the filter.